Delaware - 2006

Forest Health Highlights

The Resource

Delaware's forests presently cover approximately 375,000 acres, roughly 35 percent of the land area in the State. Delaware has experienced a rapid conversion of forests and agricultural lands to residential and other urban uses since the 1980s.

Forest Pest Issues

Gypsy Moth — Aerial surveys of the entire State were carried out in June 2006. No detectable defoliation was observed except for an 8-acre isolated area in southern Sussex County. A subsequent ground survey verified that defoliation was due to a gypsy moth infestation. The stand consisted of sweetgum (preferentially damaged), red maple, and loblolly pine. This was the eighth consecutive year that Delaware had no gypsy moth spray program.

Southern Pine Beetle (SPB) — Ground and aerial surveys in 2006 confirmed that populations of this pest remain at low levels. There has not been a major infestation of this pest since 1996. Delaware continues to participate in the South-wide Southern Pine Beetle Pheromone Study. Lindgren traps were placed in four locations in Sussex County. Counts this year of southern pine beetles and clerids indicate that populations of southern pine beetle remain at low and/or declining levels.

Asian Longhorned Beetle (ALB) — Delaware is constantly on alert for this pest due to the heavy concentration of tree host species found in urban and rural areas. In 2006, as in 2005, forest health personnel inspected maple trees in the port of Wilmington looking for signs or symptoms of ALB; no evidence of this pest was found. There were no reports from other areas of the State.

Emerald Ash Borer (EAB) — Urban forests in Delaware contain large populations of ash trees that could serve as hosts for this pest. An early detection program, implemented in 2005, continues as a cooperative effort between the Forest Health and Urban & Community Forestry Programs. Staff and interns from the Delaware Forest Service used a bucket truck to inspect several dozen ash trees in the Wilmington area in 2006. Wilmington is considered a high priority area for EAB inspections because it has an international port and contains higher populations of ash trees than most other areas of Delaware. Thus far no signs of EAB have been observed.

Sirex Wood Wasp (*Sirex noctilio***)** — A new statewide survey was initiated for this pest in 2006. In a cooperative effort among the USDA APHIS, USDA Forest Service, Delaware Forest Service, and the Plant Industries Section of the Delaware Department of Agriculture, 24 Lindgren traps were installed in pine stands throughout Delaware. Baited with "*Sirex noctilio* blend," traps remained in place from May until November. Insects were collected from traps every 2 weeks and identified by a professional contractor. *Sirex noctilio* was not detected.

Hemlock Woolly Adelgid (HWA) — Most of the eastern hemlock trees in Delaware appear to be infested to some degree with HWA. A native stand in New Castle County was treated with systemic injections of imidacloprid in 2005. Hemlock inspections in 2006 suggest that these treatments are effective in reducing pest populations.

Other Insects — In 2006, service foresters reported bagworm moth (*Thyridopteryx ephemeraeformis*) damage as light to moderate throughout Delaware, similar to 2005. Eastern tent caterpillar (*Malacosoma americanum*) moderately infested black cherry throughout the State. Fall webworm (*Hyphantria cunea*) caused light damage to black cherry and black walnut trees throughout the State. The locust leafminer (*Odontota dorsalis*) caused moderate defoliation in approximately 40 percent of black locust stands in New Castle and northern Kent Counties in 2006 and appeared to be increasing since 2005. Damage from the red-headed pine sawfly (*Neodiprion lecontei*) increased in Sussex County where light to moderate defoliation of 5- to 15-year-old loblolly pine plantations was observed in 2006. This may mark the beginning of a new outbreak cycle that could last several years.

Disease Concerns

Bacterial Leaf Scorch (BLS) (*Xylella fastidiosa*) — This disease was previously surveyed for and observed only in New Castle County. However, symptoms of this disease were observed in Kent and Sussex Counties during a statewide survey in 2006. This survey revealed that the disease is widespread throughout Delaware in both urban and rural areas. Over 40 samples with typical BLS symptoms were sent to the

University of Delaware Plant Diagnostic laboratory for ELISA analysis. Virtually 100 percent of the samples were positive. Urban species affected were pin oak and northern red oak. Rural species most affected were northern red oak, black oak, and scarlet oak. As a result of this survey, the Delaware Forest Service has recommended in a press release that pin and northern red oaks not be used in any new plantings where other less susceptible oaks, such as willow oak, or other urban species can be utilized. Since this is the first time that BLS has been observed in rural forests, further attention and future surveys will be planned.

Ash Rust (*Puccinia sparganioides*) — Spring weather was ideal for disease development, and a dramatic increase in defoliation was observed in 2006 throughout the State. Damage to green and white ash, which are extensively planted in many areas, at times resembled heavy gypsy moth defoliation of white oak. Most trees produced a new flush of foliage, but some mortality (less than 5 percent) of stressed trees has been observed. Urban areas and tree nurseries statewide were also affected.

Pinewood Nematode (*Bursaphelenchus xylophilus*) — Pinewood nematode has caused 20 percent or greater mortality of non-native pines in some areas. Native pines have been largely unaffected. Stress due to multiple years of drought is probably responsible for the increase in mortality of Japanese black pine in Delaware. This tree has been planted extensively in several towns on the Atlantic coast in southeastern Delaware. County surveys, conducted in 2006 for the first time since 1982, will continue in coming years.

Dogwood Anthracnose — Dogwood anthracnose (*Discula destructiva*) appears to have stabilized, and many trees observed growing on well-drained soils have escaped infection.

Verticillium Wilt — This fungal disease continues to cause limited mortality in landscape and forest trees, including yellow-poplar and maples.

Dutch Elm Disease — This pathogen continues to be an issue in several neighborhoods in Wilmington. The Delaware Forest Service has been working with the Delaware Center for Horticulture to save a number of large American elms in this area.

Sudden Oak Death — An expanded survey program for *Phytophthora ramorum* took place in 2006. Delaware Forest Service personnel collected leaf and twig samples at 15 sites. Ten sites were in forested areas adjacent to plant vendors known to have received potentially infected plant materials. Five sites were in general forest areas. All 54 samples from the 2006 season tested negative for *P. ramorum*.

Forest Health Monitoring

FHM Herpetological Monitoring — Monitoring terrestrial woodland salamander populations provides a more complete assessment of forest ecosystem health than if this piece of information was omitted. In 2006, 11 study plots were resurveyed for salamanders using wood cover boards. The 8- by 8-inch rough-cut oak boards were spaced 50 feet apart on an 8 by 8 grid (64 total cover boards per plot). Salamander counts appear stable over the 7-year monitoring period.

Deer Exclosures — Deer in Delaware benefit from near-ideal habitat and mild winters. As a result, deer populations have reached very high densities that result in browse damage to understory forest plants. A deer exclosure study has been initiated by the Delaware Forest service to quantify the browse effect in Delaware's hardwood forests. The study will monitor understory vegetation on fenced plots and on control plots without fencing over a period of 10 years.

Forest Fragmentation

Forest fragmentation continues to be an important issue in Delaware. Currently, approximately 13 percent of the State's forests have been displaced by urban areas. In a recent survey, it was estimated that by the year 2050, up to 43 percent of Delaware's forests will have been replaced by new urban areas. A 2006 analysis by the Delaware Forest Service determined that approximately 3,000 acres of forest have been cleared for development each year during the last 5 years,. This figure represents about one percent of the total forest land in the State. Clearly, the current rate of conversion is not sustainable for the long term.

For More Information

Delaware Forest Service
2320 South DuPont Highway
Dover, DE 19901-5515
Phone: (302) 698-4500
www.state.de.us/deptagri/forestry/protec.shtml#forest_health_mon

USDA Forest Service
Northeastern Area
State and Private Forestry
Forest Health Protection
180 Canfield Street
Morgantown, WV 26505
Phone: (304) 285-1541
www.na.fs.fed.us/